

**TDS TELECOM**

*Government and Regulatory Affairs*

EX PARTE OR LATE FILED

August 9, 1996

**Ex Parte**

William F. Caton  
Acting Secretary  
Federal Communications Commission  
1919 M Street, N.W., Room 222  
Washington, DC 20554

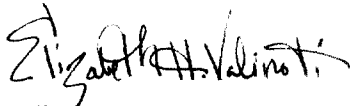
**Re: CC Docket 96-45, In the Matter of Federal-State Joint Board on  
Universal Service**

Dear Mr. Caton:

On August 9, 1996, Kevin Hess and Tom McCabe of TDS Telecom met with Samuel Loudenslager of the Universal Service Joint Board to discuss concerns of rural LECs with respect to the Joint Board proceeding. Specifically, the TDS Telecom representatives asked that rural LECs: 1) not be forced to use proxies; 2) be allowed to disaggregate their high cost support to reflect cost differences within their serving areas; and, 3) be allowed to maintain USF and DEM weighting support and their current study areas. Additionally TDS Telecom representatives asked that adequate transition periods be given should the FCC implement rules that would cause significant shifts in cost recovery, and that industry be given sufficient time to quantify and evaluate impacts of proposed rules.

Enclosed herewith are the documents provided to Mr. Loudenslager at today's meeting. I have enclosed two copies of this notice and attachments in accordance with sections 1.1206(a)(1) and 1.1206(a)(2) of the Commission's rules. Please date stamp and return the provided copy in the enclosed self-addressed stamped envelope.

Respectfully submitted,



Elizabeth H. Valinoti  
Manager  
External Relations

Attachments

cc: S. Loudenslager

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**TDS TELECOM**  
**Universal Service Key Points**  
**for Consideration of the Federal-State Joint Board**  
**Summer 1996**

*The Joint Board must recommend rules based on the universal service standards and principles set forth by Congress in the 1996 Act. Congress intended these provisions to ensure rural America of quality, affordable, evolving services, including access to advanced telecommunications and information services and reasonably comparable rural and urban services and rates.*

- 1) Rural LECs' high cost recovery should not be based on proxies.
  - So far no proxy has proven sufficiently accurate in predicting rural LECs' costs to avoid under- or over-compensation
  - Experimenting with proxies for rural LEC high cost recovery would conflict with the Act's mandate for sufficient, specific, and predictable federal high cost mechanisms used only to provide universal service
  - Efficient entry requires all ETCs in rural areas to be reimbursed out of a high cost fund based on actual costs
  
- 2) Incumbent LECs should be allowed to disaggregate their high cost support to reflect cost differences within their serving areas.
  - Because new entrants will naturally build their facilities only to the lowest cost subscribers, new entrants will receive a windfall of unnecessary support if they receive support based on the average cost of the incumbent LEC to serve the entire serving area with its own facilities
  - Disaggregation of the incumbent LEC's support will ensure that customers do not pay higher rates than necessary to achieve Congress' universal service and competition goals, and that the fund is properly targeted.
  - Proxies may be an appropriate tool for rural LECs to disaggregate the total high cost support based on their actual costs

**TDS TELECOM**  
**Universal Service Key Points**  
**(continued)**

- 3) USF, DEM weighting, and current study areas should all be maintained for rural LECs.
  - Merging USF and DEM would increase bundling, reduce targeting, undermine sufficiency, increase intrastate costs, and impair rural infrastructure development
  - Facts in the record prove the traffic sensitivity and cost differences of rural LECs' switches.
  - Forced study area consolidation would raise intrastate cost recovery burdens, ignore corporate boundaries, fail to mitigate high costs, and conflict with the statutory principle of sufficient federal cost recovery
- 4) Any significant shifts in cost recovery will require adequate transition periods to mitigate adverse effects on ratepayers.
  - The larger the proposed changes, the longer the transition needed for rural LECs
- 5) The record must fully quantify and evaluate the impact of specific rules before they can be adopted as consistent with the 1996 Act.
  - Unless specific rules are proposed between now and November 8, and fully explored in the record before the Joint Board's recommendation, rural LECs must have the opportunity to comment on the impact of recommended rules between November 8, 1996, and the May 8, 1997, deadline for FCC action.

## Traffic Sensitivity of the Central Office Switching System

TDS Telecom met with FCC Bureau Chief Kenneth Moran on March 25 to discuss the traffic sensitivity of central office switching systems. As part of this meeting, Mr. Moran made a request for more data from TDS regarding the engineering of switches for TDS. This document describes the study that was undertaken by TDS as a result of that request and provides further evidence that central office switching systems are indeed a traffic sensitive resource.

In the TDS Telecom analysis, the 5ESS-2000 switching system was used as the representative switching platform. TDS used its knowledge and experience in engineering the 5ESS-2000 switch to produce a number of priced switch configurations with varying line usage and switch size parameters. In all, twenty-five (25) separate switch engineering runs were made varying switch access line size and usage per line. Access line size refers to the number of physical lines terminated on the switching system. In the TDS analysis, we chose switch sizes of one thousand (1000), five thousand (5000), ten thousand (10,000), twenty thousand (20,000) and fifty thousand (50,000) to get a view across all typical deployments of the 5ESS-2000 switch. In the territories serviced by TDS, however, the actual switch sizes deployed range from 19 lines (not a 5ESS-2000 switch) to 16,919 with an average of 1,354 access lines per switch. (It is our understanding that the average RBOC switch size is around 11,000 access lines.) Usage per line refers to average traffic generated per line per hour measured in one hundred call seconds (CCS). Again, we picked representative usage levels to get a view across typical switch deployments. We chose 2 CCS as the lowest usage line, 4 CCS as the traditional residential line, 6 CCS as the traditional business line, 10 CCS as a high-usage business or Internet access line, and 36 CCS as a dedicated line. Each of these line usage types co-exist within the same switching system but we have made the simplifying assumption that all lines on the switch have the same usage.

The following table summarizes the TDS study. Each element of this table reflects the actual 5ESS-2000 switching system cost per line, normalized against an arbitrary point to eliminate pricing effects such as vendor volume discounts and/or decreasing electronic costs over time. In this instance, the normalization point is the 50,000 access line switch engineered at 2 CCS per line and so this point is arbitrarily set to 1.0. All other cost per line price points are given relative to this point in the table. By picking this as the normalization point, we can easily see why support mechanisms are required for companies deploying small exchanges. For example, at 2 CCS per line, the switching costs per line are 9.6 times greater for a 1000 line access switch compared to a 50,000 line access switch. Similarly, it is demonstrated that per line switching costs are 4.2 times greater for a high usage business line (10 CCS) than for a low usage residential line (2 CCS) at the 50,000 access line switch size.

Access Lines	2 CCS	4 CCS	6 CCS	10 CCS	36 CCS
1000	9.6	9.9	10.9	13.2	15.2
5000	2.6	2.8	3.1	5.8	8.0
10000	1.8	1.9	2.2	4.9	7.0
20000	1.3	1.4	1.7	4.4	6.6
50000	1.0	1.2	1.4	4.2	6.3

Table 1: Cost/Line Normalized Against Access Line Size and Line Usage

In order to more clearly show the traffic sensitive nature of switching, we have reformatted the data in Table 1. The traffic sensitive nature of switching costs is better demonstrated taking the percent change within a given access line switch size as shown in Table 2. In this table, we have normalized all per line switching costs at the 2 CCS usage level and have shown relative cost within an access line switching system size. This analysis shows, for example, that the cost per line for the high usage line (10 CCS) is 2.2 times that of the low usage (2 CCS) line at the 5000 access line switch size. It is interesting to note that the larger the switch size, the greater the sensitivity to traffic usage. However, even in the smallest switch configuration, the cost per line can vary as much as 59% depending on the usage of the lines.

Access Lines	2 CCS	4 CCS	6 CCS	10 CCS	36 CCS
1000	1.00	1.03	1.14	1.38	1.59
5000	1.00	1.07	1.18	2.20	3.03
10000	1.00	1.09	1.23	2.77	3.98
20000	1.00	1.10	1.31	3.44	5.08
50000	1.00	1.17	1.41	4.19	6.31

Table 2: Cost/Line Normalized Against Line Usage

In summary, TDS has conducted a study to provide data regarding the traffic sensitivity of central office switching resources. This data conclusively shows that a substantial portion of switching costs are indeed traffic sensitive, particularly when high usage business or Internet access lines are considered. TDS believes that support mechanisms should accurately reflect the underlying costs of the resource supported. TDS believes that combining traffic sensitive support mechanisms with non-traffic sensitive support mechanisms will result in a support mechanism which would be grossly inaccurate. We strongly urge the Commission to consider this study performed by TDS before taking action regarding any changes to existing support mechanisms